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A NEW ABERT SQUIRREL FROM UTAH

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The senior author recently reported the occurrence of *Sciurus aberti* in southern Utah (Durrant; Jour. Mamm., 28: 66, Feb. 15, 1947). This constituted the first record of the genus known to us from the state. A second specimen was subsequently obtained from the same approximate locality. A comparison of these animals with topotypes and near topotypes of the known races of *Sciurus aberti* indicates that they represent an heretofore unknown race. The name and description of the new form are as follows:

Sciurus aberti navajo, new subspecies

Type.—Male, adult, skin and skull, No. 4775, Museum of Vertebrate Zoology, University of Utah; 1 mi. E Kigalia Ranger Station, 30 mi. W Blanding, Natural Bridges National Monument Road, 8,000 feet, San Juan County, Utah; September 10, 1946; collected by George F. Edmunds and Irving B. McNulty.

Range.—Known only from the type locality.

Diagnosis.—Size medium; hind feet short. Color: Upper parts a grizzled Iron Gray due to black and white banded hairs grading to pure black on the sides; (capitalized color terms according to Ridgway, Color Standards and Color Nomenclature, Washington, D. C., 1912); dorsal stripe Cinnamon Rufous, confined to posterior regions, and nearly obsolete; ear tufts short and black; postauricular spots Cinnamon Rufous and much reduced in size; upper parts of head and especially the sides of head grading to white on lips and eye ring; vibrissae black; dorsal parts of tail same as upper body parts, but overlaid with long, white-tipped guard hairs; sides of tail broadly edged in white; underparts white, the hairs being Dark Plumbeous at base except on the forelegs; ventral surface of tail white (hairs white to the roots) except the proximal portion of the tail which is the same grizzled gray as the upper parts; dorsal and outer surfaces of legs to tarsal and carpal joints same as upper parts, white below. Skull: Supraorbital ridge with very deep notch; foramen magnum ovoid, not vaulted; lambdoidal crest plate-like rather than ridged; braincase broad and well inflated.

Measurements.—The measurements in millimeters of the available adult male specimens are as follows, those of the type being first: Total length, 486,510; tail vertebrae, 220,231; hind foot, 67,74; ear, 31,44; occipito-

nasal length of skull, 60.6, 61.0; zygomatic breadth, 37.1, 35.4; nasal length, 20.6, 21.0; basilar length (Hensel), 47.0, 46.4; palatal length, 26.7, 26.4; cranial depth, 19.2, 18.8; alveolar length of maxillary tooth row, 11.0, 11.5.

Comparisons.—The specimens of *Sciurus aberti navajo* may be distinguished from fall and winter taken topotypes of *S. a. mimus*, which it resembles most closely, as follows: Size: Slightly larger; ear tufts shorter (taking cognizance of seasonal change). Color: Darker, blackish undertone as opposed to brownish; lateral stripes and ears darker (black); Cinnamon Rufous of posterior upper parts more reduced; postauricular patches smaller. Skull: Notch in supraorbital ridge more pronounced; foramen magnum ovoid rather than vaulted; lambdoidal crest flattened and plate-like, rather than crested; rostrum wider (9.6 mm. as opposed to 9.2 mm. in comparable males); basilar length greater (46.7 mm. as opposed to 45.8 mm.); nasals longer (20.8 mm. as opposed to 19.7 mm.); maxillary tooth row slightly longer (11.25 mm. as opposed to 10.90 mm.).

Compared to topotypes and near tototypes of *Sciurus aberti chuscensis*, the nearest geographic race to the south, *S. a. navajo* may be recognized as follows: Size: Smaller. Color: Upper parts blackish without brownish undertone; Cinnamon Rufous dorsal area much reduced. The specimens of *S. a. chuscensis* are summer specimens and, therefore, a comparison of ear tufts is not feasible. Skull: Sphenopalatine vacuities smaller; foramen magnum ovoid rather than vaulted; notch in supraorbital ridge deeper; breadth of braincase slightly greater at level of auditory meatus (25.3 mm. as opposed to 24.7 mm.).

From late summer and fall topotypes of *Sciurus aberti aberti, S. a. navajo* may be distinguished as follows: Color: Darker, no brownish and cinnamon undertone, especially on ears and sides; Cinnamon Rufous dorsal area greatly reduced, being nearly obsolete as opposed to well developed; ear tufts much shorter in specimens of the same season; hind feet shorter (70.5 mm. as opposed to 75 mm.). Skull: Palate shorter (26.5 mm. as opposed to 27.2 mm.); braincase broader at level of auditory meatus (25.3 mm. as opposed to 24.5 mm.); postorbital constriction greater (19.35 mm. as opposed to 18.6 mm.).

Sciurus aberti navajo may be distinguished from topotypes and near topotypes of *S. a. ferreus* as follows: Size: Larger. Color: *S. a. ferreus* is known to occur in several color phases ranging from Blackish Brown (*1*) to the gray phase resembling other Abert squirrels. Compared to the gray phase, *S. a. navajo* may be distinguished by its lack of the brownish undertone; Cinnamon Rufous dorsal area reduced, but quite absent in *S. a. ferreus;* short pure black ear tufts as opposed to the long brownish tufts; white tail border more marked. Skull: Foramen magnum flattened and less vaulted; notch in supraorbital ridge more pronounced; rostrum wider (9.6 mm. as opposed to 9.1 mm.); basilar length greater (46.7 mm. as opposed to 45.3 mm.); occipitonasal length greater (60.8 mm. as opposed to 58.4 mm.); zygomatic breadth greater (36.2 mm. as opposed to 34.9 mm.); post orbital constriction greater (19.35 mm. as opposed to 18.20 mm.); braincase wider at level of auditory meatus (25.3 mm. as opposed to 24.4 mm.); nasals longer (20.8 mm. as opposed to 19.7 mm.); maxillary tooth row slightly longer (11.25 mm. as opposed to 10.8 mm.).

Remarks.—It is quite remarkable that the presence of an animal as large and spectacular as an Abert squirrel could remain unknown so long to Utah collectors. The known range of this race is, however, fairly remote and until recent years almost inaccessible. Messrs. Julian Thomas and Tom Phillips, U. S. Forest Rangers of the La Sal National Forest who obtained one specimen and were instrumental in securing the other, report that the animals are nowhere common and the range is quite restricted. These facts also, no doubt, contributed to the delayed discovery of the race.

The type locality is a broad flat-topped tableland abutting on the west slope of the Abajo Mountains in San Juan County. This highland area is completely isolated from any other mountains by the tangled canyons of the Colorado River and its feeders to the west, by sage plains to the south and east, and by mixed-shrub desert to the north. The Abert squirrels, it will be recalled, evidence one of the closest associations with a specific vegetative type of any mammal. They seem to be entirely dependent upon the yellow pine which is their chief source of food supply; they are not known to occur in any situation where these trees are not present. Hence the distribution of known races of *Sciurus aberti* is largely a series of isolated populations correlated with small discontinuous stands of yellow pine. It seems apparent that the present distribution of these forests is a result of past climatological change which at one time permitted the existence of "bridges" of yellow pine across what is now arid desert land, thus affording a possible means of dispersal to the squirrels. With reference to past climatic conditions, it is recognized that much of the higher part of this southern Utah country supported glaciers (Gregory, U. S. Geol. Surv., Prof. Pa. no. 188:64, 1938). At least the presence of certain relict flora of the region is mute evidence of a different past climatic situation.

Inasmuch as these squirrels remained so long undetected in Utah, perhaps other isolated populations will be found when the yellow pine associations of similar desert mountains in this region are more thoroughly studied.

Specimens examined.—2; *San Juan County:* 1 mi. E Kigalia Ranger Station, 30 mi. W Blanding on Natural Bridges National Monument Road, 8,000 feet (type locality), 1; Elk Ridge, La Sal National Forest, 8,000 feet, 1.

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